ABSTRACT OF THE DISCLOSURE

A layout system (10) includes a place and route tool (12) and a datapath layout generator. The datapath layout generator (14) provides a mechanism for the designer to place datapath cells in a structured arrangement. The datapath layout generator (14) sends a language configuration file to the place and route tool (12) to install the datapath structure. The datapath structure assigned "fixed" status, which prevents the place and route tool (12) from moving the datapath cells in later operations. Constraints for the remaining cells are then installed in the place and route tool (12), and criteria-driven placement, such as timing-driven placement, can be used to arrange these cells in an optimum fashion. The remaining cells can be placed in open areas of the datapath structure for improved density.